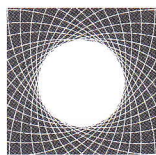


Stainless steel wires for cold heading

ASADA CORPORATION

<http://www.asada-metal.com/>

Asada Corporation is a specialized trading company
for wires and strips such as steels, wires, piano wires,
hard drawn steel wires, stainless steel wires etc.

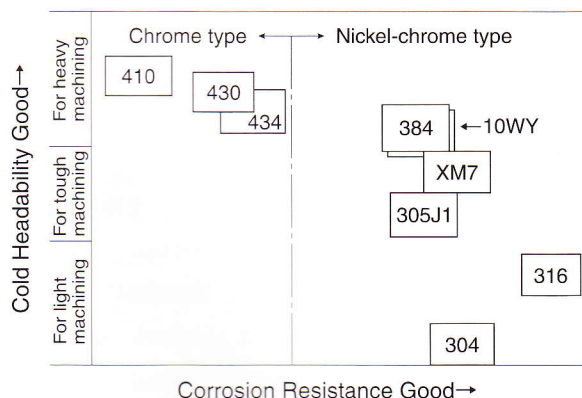


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NAS COLD HEADING WIRES

Stainless steel with excellent corrosion resistance and superior mechanical strength is the optimum material for fasteners such as bolts, nuts, tapping screws, machine screws and wooden screws.

With consideration given to screw-thread formation, especially for the purpose of preventing problems during cold-heading, the most optimal raw material must be used and processed under optimal heading conditions. NAS cold heading wires are manufactured with special consideration for chemical composition, headability, uniformity and surface finish.



TYPES OF STEEL

Steel Wire NAS	C	Si	Mn	P	S	Ni	Cr	Other	SUS
304	0.08Max.	1.00Max.	2.00Max.	0.045Max.	0.030Max.	8.00~10.50	18.00~20.00	—	304
304J3	0.08Max.	1.00Max.	2.00Max.	0.045Max.	0.030Max.	8.00~10.50	17.00~19.00	Cu 1.00~3.00	304J3
304FM	0.08Max.	1.00Max.	2.00Max.	0.045Max.	0.030Max.	8.00~10.50	18.00~20.00	Pb addition	—
305J1	0.08Max.	1.00Max.	2.00Max.	0.045Max.	0.030Max.	11.00~13.50	16.50~19.00	—	305J1
316	0.08Max.	1.00Max.	2.00Max.	0.045Max.	0.030Max.	10.00~14.00	16.00~18.00	Mo 2.00~3.00	316
384	0.08Max.	1.00Max.	2.00Max.	0.045Max.	0.030Max.	17.00~19.00	15.00~17.00	—	384
XM7	0.08Max.	1.00Max.	2.00Max.	0.045Max.	0.030Max.	8.50~10.50	17.00~19.00	Cu 3.00~4.00	XM7
10WY	0.03Max.	1.00Max.	2.00~4.00	0.045Max.	0.010Max.	9.00~10.00	17.00~19.00	Cu 3.00~4.00	—
403	0.15Max.	0.50Max.	1.00Max.	0.040Max.	0.030Max.	—	11.50~13.00	—	403
410	0.15Max.	1.00Max.	1.00Max.	0.040Max.	0.030Max.	—	11.50~13.50	—	410
430	0.12Max.	0.75Max.	1.00Max.	0.040Max.	0.030Max.	—	16.00~18.00	—	430
434	0.12Max.	1.00Max.	1.00Max.	0.040Max.	0.030Max.	—	16.00~18.00	Mo 0.75~1.25	434
430LXM	0.02Max.	1.00Max.	1.00Max.	0.040Max.	0.006Max.	—	9.00~21.00	Nb10 (C+N) Min. N 0.20Max. Cu 0.30~0.60	—

PROPERTIES

An optimal type of steel must be selected according to the configuration and application of each screw thread.

NAS 410, 430, and 434 (which contains only chromium) is easy to process and can be (for screw threads) used under conditions where corrosion resistance is not so critical.

Because the hardness of NAS410 can be enhanced by processing the threads through post-machining, NAS410 is suitable for tapping screws.

The quench-hardening process requires that the lower limit of carbon content be 0.08% or more. Austenite stainless steel containing chromium and nickel is very effective in terms of corrosion resistance, but it includes the

risk of causing intense strain hardening.

To improve upon these shortcomings, we have adjusted the chemical compositions such as the contents of carbon, chromium and nickel, and have developed new grades of steel with improved cold headability without sacrificing the level of corrosion resistance.

Easier, more economical product fabrication can be achieved by selecting an optimal steel type with consideration for factors such as the level of difficulty in shaping the head section and the application of the screw.

Screw Configurations and Applicable Steel Grades

Types of Steel	Processability	Applicable Screw Configurations
NAS 304 (SUS304) NAS 304J3 (SUS304J3) NAS 304FM NAS 316 (SUS316)	For light machining	Hexagon head bolts, hexagon head machine screws, square head bolts, machine screws with slotted round head, fillister head, T-head, oval countersunk head, or pan-head and wooden screws, and nuts.
NAS XM7 (SUSXM7) NAS 305J1 (SUS305J1)	For tough machining	Machine screws with slotted and cross recessed head, binding head, truss head, round head, fillister head, flat head, countersunk, oval countersunk head, and pan head, NAS 305J1 (SUS305J1), tapping screws, wooden screws, hexagon head bolts, and nuts
NAS 384 (SUS384) NAS 10WY	For heavy machining	Various cross-recessed-headed machine screws, tapping screws, truss head- and binding head-tapping screws, and nuts
NAS 410 (SUS410) NAS 430 (SUS430) NAS 434 (SUS434)	For heavy machining	Bolts, wooden screws, nuts, rivets, various machine screws with slotted head or cross-recessed-head, and tapping screws

MECHANICAL PROPERTIES

Stainless-steel cold-heading wires are available in Class A and Class B, as specified by JIS G4315.

Types of Steel		Class A (WSA) or SS			Class A (WSA) or SS		
		Tensile Strength N/mm ²		Reduction of Area %	Tensile Strength N/mm ²		Reduction of Area %
NAS	SUS	Dia. Over 2.00mm, 5.50mm Max.	Dia. 0.80mm Min., 2.00mm Max.		Dia. Over 2.00mm, 17.0mm Max.	Dia. 0.80mm Min., 2.00mm Max.	
304	304	510~660	560~710	70Min.	530~710	580~760	65Min.
304J3	304J3	510~660	560~710	70Min.	530~710	580~760	65Min.
304FM	—	540~770	560~790	70Min.	560~780	580~880	65Min.
305J1	305J1	490~640	530~680	70Min.	510~690	560~740	65Min.
316	316	510~660	560~710	70Min.	530~710	580~760	65Min.
384	384	450~600	490~640	70Min.	460~640	510~690	65Min.
XM7	XM7	440~590	480~630	70Min.	450~630	500~680	65Min.
10WY*	—	440~540	490~590	70Min.	460~590	540~640	65Min.
403	403	—	—	—	460~640	540~740	65Min.
410	410	—	—	—	460~640	540~740	65Min.
430	430	—	—	—	450~600	500~700	65Min.
434	434	—	—	—	460~640	540~740	65Min.
660	(SUH) 660	580~730	630~780	65Min.	600~780	650~830	60Min.

※Note: SS and SSP applicable.

LUBRICATION COATING

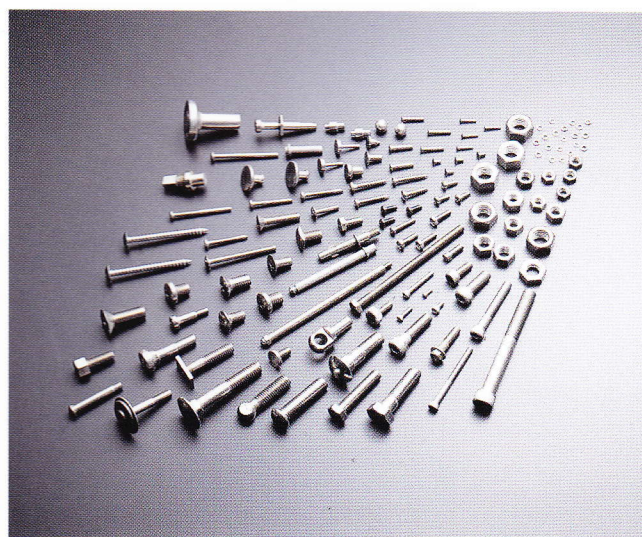
In addition to bare wire, we provide NAS cold heading wires with oxalate coating or water-soluble coating as the cold heading lubricant, based on the customer's request. These coatings have the effect of prolonging tool life and

preventing cracks from developing at the screw head.

After machining they can be removed easily using dilute nitric-acid solution.



Cold Heading Wires



Machine screws, wooden screws and tapping screws